

TITLE 13. CALIFORNIA AIR RESOURCES BOARD

NOTICE OF PUBLIC MEETING TO CONSIDER PROPOSED REGULATION TO PROVIDE CERTIFICATION FLEXIBILITY FOR INNOVATIVE HEAVY-DUTY ENGINES AND CALIFORNIA CERTIFICATION AND INSTALLATION PROCEDURES FOR MEDIUM- AND HEAVY-DUTY VEHICLE HYBRID CONVERSION SYSTEMS (INNOVATIVE TECHNOLOGY REGULATION)

The Air Resources Board (ARB or Board) will conduct a public hearing at the time and place noted below to consider approving for adoption the proposed Regulation to Provide Certification Flexibility for Innovative Heavy-Duty Engines and California Certification and Installation Procedures for Medium- and Heavy-Duty Vehicle Hybrid Conversion Systems (Innovative Technology Regulation or ITR), and to approve for adoption proposed amendments to Exhaust Emissions Standards and Test Procedures -1985 and Subsequent Model Heavy-Duty Engines and Vehicles.

DATE: October 20, 2016

TIME: 9:00 a.m.

LOCATION: San Joaquin Valley Air Pollution Control District Office
1990 East Gettysburg Avenue
Fresno, California 93726

This item will be considered at a one-day meeting of the Board, which will commence at 9:00 a.m., on October 20, 2016. Please consult the agenda for the meeting, which will be available at least 10 days before October 20, 2016, to determine the order in which this item will be considered.

WRITTEN COMMENT PERIOD AND SUBMITTAL OF COMMENTS

Interested members of the public may present comments orally or in writing at the meeting, and may provide comments by postal mail or by electronic submittal before the meeting. The public comment period for this regulatory action will begin on September 2, 2016. To be considered by the Board, written comments not physically submitted at the hearing, must be submitted **no later than 5:00 pm, October 17, 2016**, and must be addressed to the following:

Postal mail: Clerk of the Board, Air Resources Board
1001 I Street, Sacramento, California 95814

Electronic submittal: <http://www.arb.ca.gov/lispub/comm/bclist.php>

Please note that under the California Public Records Act (Government Code section 6250 et seq.), your written and oral comments, attachments, and associated contact information (e.g., your address, phone, email, etc.) become part of the public record and can be released to the public upon request.

ARB requests that written and email statements on this item be filed at least 10 days prior to

the meeting, so that ARB staff and Board members have additional time to consider each comment. The Board encourages members of the public to bring any suggestions for modifications of the proposed regulatory actions to staff's attention in advance of the hearing.

AUTHORITY AND REFERENCE

These regulatory actions are proposed under the authority granted in California Health and Safety Code sections: 38501, 38510, 38560, 38580, 39500, 39515, 39516, 39600, 39601, 40000, 43004, 43006, 43008.6, 43009.5, 43000, 43011, 43012, 43013, 43018, 43100, 43101, 43102, 43103, 43104, 43105, 43106, 43107, 43204, 43205, 43205.5, 43806; Veh. Code sections: 27156, 28114, and 38391. These actions are proposed to implement, interpret, and make specific Health and Safety Code sections: 38501, 38505, 38510, 38560, 39002, 39003, 39010, 39017, 39033, 39500, 39602.5, 39650, 39657, 39667, 39701, 43000, 43000.5, 43004, 43006, 43008.6, 43009, 43009.5, 43010, 43013, 43017, 43018, 43100, 43101, 43101.5, 43102, 43104, 43105, 43106, 43107, 43202, 43204, 43205, 43205.5, 43206, 43210, 43211, 43212, 43213 and 43806; Veh. Code, § 27156, 28114, and 38391.

INFORMATIVE DIGEST OF PROPOSED ACTIONS AND POLICY STATEMENT OVERVIEW (GOV. CODE. § 11346.5, subd. (a)(3))

Sections Affected: Proposed adoption to California Code of Regulations, title 13, sections 2208, 2208.1, 2208.2, including the following document incorporated by reference herein: "California Certification and Installation Procedures for Medium-and Heavy-Duty Vehicle Hybrid Conversion Systems." Proposed amendments to California Code of Regulations, title 13, section 1956.8, including the following documents incorporated by reference therein: "California Exhaust Emission Standards and Test Procedures for 2004 and Subsequent Model Heavy-Duty Otto-Cycle Engines and Vehicles," as last amended September 2, 2015, and the "California Exhaust Emission Standards and Test Procedures for 2004 and Subsequent Model Heavy-Duty Diesel Engines and Vehicles," as last amended September 2, 2015.

Documents Incorporated by Reference:

The following documents are proposed for incorporation by reference in proposed California Code of Regulations, title 13, sections 2208, 2208.1 and 2208.2:

- U.S. EPA National Vehicle and Fuel Emissions Laboratory guidance letter CD-12-07 (Revised), dated March 30, 2012;
- "California Interim Certification Procedures for 2004 and Subsequent Model Hybrid-Electric and Other Hybrid Vehicles, in the Urban Bus and Heavy-Duty Vehicle Classes", amended on October 21, 2014;
- 40 Code of Federal Regulations, Part 1036.705(d), as last amended September 15, 2011
- 40 Code of Federal Regulations, Part 86.098-24, as last amended April 28, 2014
- 40 Code of Federal Regulations, Part 89.112(d), as last amended July 13, 2005

- 40 Code of Federal Regulations, Part 1065.270, as last amended April 28, 2014
- 40 Code of Federal Regulations; Part 86.004-2, as last amended on August 8, 2014

The following documents are proposed for incorporation by reference in the amendments to the “California Exhaust Emission Standards and Test Procedures for 2004 and Subsequent Model Heavy-Duty Diesel Engines and Vehicles” and are thereby incorporated by reference in the proposed California Code of Regulations, title 13, sections 1956.8.

- 40 Code of Federal Regulations, Part 1036.108, as amended September 15, 2011

The following documents are proposed for incorporation by reference in the proposed new test procedures “California Certification and Installation Procedures for Medium- and Heavy-Duty Vehicle Hybrid Conversion Systems,” and thereby incorporated by reference in the proposed California Code of Regulations, title 13, sections 2208, 2208.1 and 2208.2:

- 40 Code of Federal Regulations, Part 1065, Subpart K, as amended April 28, 2014
- 40 Code of Federal Regulations, Part 1037.510(a), as amended September 15, 2011
- 40 Code of Federal Regulations, Part 86, Appendix I, as amended April 28, 2014
- 40 Code of Federal Regulations, Part 1066.801(c), as amended February 19, 2015
- 40 Code of Federal Regulations, Part 1037, Appendix I, as amended September 15, 2011
- California Code of Regulations, title 13, section 1965, as amended October 8, 2015
- California Code of Regulations, title 13, section 1968.2, as amended July 25, 2016
- California Code of Regulations, title 13, section 1971.1, as amended July 25, 2016
- 40 Code of Federal Regulations, Part 1065, Subpart J, as amended April 28, 2014
- 40 Code of Federal Regulations, Part 86.004-28(i)(1), as amended April 28, 2014
- 40 Code of Federal Regulations, Part 86, as amended February 19, 2015
- 40 Code of Federal Regulations, Part 1037.525, as amended June 17, 2013
- 40 Code of Federal Regulations, Part 1037.550, as amended June 17, 2013
- 40 Code of Federal Regulations, Part 1037.615(b)(2)(iii) as amended June 17, 2013
- California Code of Regulations, title 13, sections 2112 through 2121 as amended December 5, 2014

- "California Exhaust Emission Standards and Test Procedures for 2018 and Subsequent Model Zero-Emission Vehicles and Hybrid Electric Vehicles, in the Passenger Car, Light-Duty Truck and Medium-Duty Vehicle Classes", amended September 3, 2015;
- "California Interim Certification Procedures for 2004 and Subsequent Model Hybrid Electric and Other Hybrid Vehicles, in the Urban Bus and Heavy-Duty Vehicle Classes", amended on October 21, 2014;
- "Procedures for Exemption of Add-on or Modified Parts", amended June 1, 1990;
- "California Evaporative Emission Standards and Test Procedures for 2001 and Subsequent Model Motor Vehicles", amended September 2, 2015;
- Society of Automotive Engineers (SAE) International J1094: Constant Volume Sampler System for Exhaust Emissions Measurement, September 2011;
- SAE International J1526: SAE Fuel Consumption Test Procedure (Engineering Method), September 2015;
- SAE International J1711: Recommended Practice for Measuring the Exhaust Emissions and Fuel Economy of Hybrid-Electric Vehicles, Including Plug-in Hybrid Vehicles, June 2010;
- SAE International J1939: Serial Control and Communications Heavy Duty Vehicle Network – Top Level Document, August 2013;
- SAE International J1939-73: Applications Layer - Diagnostics, July 2013;
- SAE International J1979 "E/E Diagnostic Test Modes", August 2014;
- SAE International J1979-DA: "Digital Annex of E/E Diagnostic Test Modes", June 2014.
- SAE International J2711: Recommended Practice for Measuring Fuel Economy and Emissions of Hybrid-Electric and Conventional Heavy-Duty Vehicles, September 2002;
- SAE International J2841: Utility Factor Definitions for Plug-In Hybrid Electric Vehicles Using Travel Survey Data, September 2010.

Background and Effect of the Proposed Regulation and Amendments

California must transition to zero- and near zero-emission transportation and freight movement technologies to meet its air quality and climate goals. These goals include:

- Reducing greenhouse emissions to 40 percent below 1990 levels by 2030;¹
- Reducing greenhouse gas (GHG) emissions from the transportation sector to

¹ Governor Brown's Executive Order B-30-2015: <http://gov.ca.gov/news.php?id=18938> .

- 80 percent below 1990 levels by 2050;²
- Deploying 1.5 million zero-emission vehicles (ZEV) by 2025, as directed in Executive Order B-16-2012, and the related goal of deploying one million ZEVs and near-ZEVs by January 1, 2023, as codified in Health and Safety Code Section 44258.4(b). The California Sustainable Freight Action Plan also includes a related goal of deploying 100,000 freight vehicles and equipment capable of zero emission operation by 2030;³ and
- Meeting federal health-based eight-hour ozone standards, as required, by 2023 and 2031 in the South Coast, which will require a reduction in oxides of nitrogen (NOx) emissions of approximately 70 percent by 2023 and 80 percent by 2031 from today's levels.⁴

While a diversity of new zero- and near-zero emission trucks and buses will be needed to meet these goals, ARB's comprehensive heavy-duty engine and vehicle certification requirements may deter some manufacturers from developing promising new heavy-duty vehicle technologies, in part because of high initial certification costs and engineering challenges. One element of certification – on-board diagnostic (OBD) requirements – can be particularly resource-intensive, and can pose engineering challenges for some new technologies. OBD is a critical emissions control program consisting mostly of added software to identify and address potential engine and aftertreatment failures that can lead to an increase in emissions. The initial challenge of OBD compliance could lead a manufacturer to choose not to develop, or to delay introduction of, innovative new truck or bus technologies that are uncertain to achieve market acceptance.

To address these challenges and encourage additional needed technology innovation, the proposed ITR would provide a more flexible short-term certification pathway, described below, for the following innovative truck and bus technologies:

- New heavy-duty engine technologies:
 - A heavy-duty spark-ignition engine (through the 2021 model year (MY)) or a heavy-duty compression-ignition engine (through the 2024 MY) meeting California's optional low-NOx emission standards;
 - A heavy-duty engine that will be installed in a hybrid heavy-duty vehicle (hybrid engine) through the 2021 or 2024 MY, if the vehicle is capable of at least 35 miles all-electric range (AER);
 - A heavy-duty engine that meets the proposed ITR's optional low-CO₂ emission standards, reflecting a 15 percent CO₂ reduction relative to a 2017 baseline engine, through the 2027 MY;

and

- Hybrid conversion systems: A hybrid conversion system installed on an ARB-certified vehicle between 6,001 and 14,000 pounds Gross Vehicle Weight Rating (GVWR) or on an ARB-certified engine installed in a vehicle over 8,500 pounds GVWR.

² Governor Brown's Executive Order B-16-2012: <http://gov.ca.gov/news.php?id=17472>.

³ ARB, *California Sustainable Freight Action Plan*, July 2016: http://www.casustainablefreight.org/app_pages/view/154.

⁴ *Mobile Source Strategy*, May 2016. <http://www.arb.ca.gov/planning/sip/2016sip/2016mobsrsrc.htm>.

These technologies, described in further detail below, each play a role in helping California meet its air quality and climate goals, yet each could face certification challenges inherent in certifying a new technology for the first time.

Innovative New Heavy-Duty Engines

The proposed ITR would provide short-term, targeted certification flexibility, particularly OBD compliance flexibility, for new heavy-duty engines meeting California's optional low-NOx standards, hybrid heavy-duty engines, and high-efficiency heavy-duty engines. To be eligible, the engine would be required to be cleaner than required by, and not used to demonstrate compliance with, the applicable mandatory engine emission standards for NOx or CO₂ for the given MY in which the manufacturer seeks certification flexibility for the engine. Proposed ITR structure and certification flexibility, summarized below, is tailored specifically to each proposed technology category in order to accelerate that technology's deployment, while still ensuring it achieves the anticipated in-use emission benefits.

Heavy-duty Engines Meeting California's Optional Low-NOx Standards. California needs significant deployment of heavy-duty engines meeting ARB's optional low-NOx engine standards to attain the National Ambient Air Quality Standard for ozone, particularly in the South Coast Air Basin, by 2023 and 2031. The proposed ITR would provide a heavy-duty spark-ignition engine meeting California's optional 0.05 or 0.02 grams per brake-horsepower hour (g/bhp-hr) NOx standard, and a compression-ignition engine meeting the 0.10, 0.05, or 0.02 g/bhp-hr NOx standard, with up to three MYs of modest certification flexibility. This flexibility would be available to manufacturers through the 2021 MY for a spark-ignition engine, and through the 2024 MY for a compression-ignition engine. This proposed structure recognizes the relative technology readiness of spark-ignition and compression-ignition low-NOx engines, and is intended to encourage certification of a diversity of low-NOx engine sizes and types before ARB may propose a mandatory low-NOx standard in the 2024 timeframe.

Heavy-duty Hybrid Engines. Hybrid trucks and buses, particularly plug-in hybrids with significant AER, can potentially reduce both criteria pollutant and GHG emissions in vocational applications, and help pave the way for zero-emission heavy-duty vehicle technology. The proposed ITR would provide an engine certified by ARB for use in a hybrid heavy-duty vehicle with up to four or six consecutive MYs of ARB certification flexibility, depending upon whether or not the engine is certified for use in a vehicle that achieves at least 35 miles AER.

A hybrid engine to be installed in a vehicle that does not achieve at least 35 miles AER (including non-plug-in hybrids) would be eligible for up to two MYs of more substantial "Tier 1" certification flexibility, followed by up to an additional two MYs of more modest "Tier 2" certification flexibility, through the 2021 MY. An engine to be installed in a hybrid vehicle that achieves at least 35 miles AER would be eligible for the same Tier 1 and Tier 2 certification flexibility provisions, but for up to four MYs of Tier 1 and two MYs of Tier 2 flexibility, through the 2024 MY.

The proposed ITR also includes provisions that would enable an engine originally certified for off-road or light- or medium-duty use to be certified as a range extender in a heavy-duty hybrid that achieves at least 35 miles AER, through the 2024 MY. The engine would have

to operate at steady state to charge the vehicle batteries, would be prohibited from directly propelling the vehicle, and would be required to meet other emission and performance criteria. Should any of these hybrid configurations gain a market foothold, information gained during ITR-based certification would enable ARB staff to propose updated certification requirements.

Recent studies have illustrated the potential for some hybrid heavy-duty vehicles to emit significantly more in-use NO_x relative to their non-hybrid counterparts.⁵ In order to be eligible for the proposed ITR's certification flexibility, a new heavy-duty hybrid vehicle would be required to achieve at least a ten percent CO₂ reduction without increasing in-use NO_x, carbon monoxide (CO), hydrocarbon (HC), or particulate matter (PM) emissions. Compliance with these emission criteria would need to be demonstrated pursuant to the proposed ITR's hybrid technology emission test procedures.

High-Efficiency Heavy-Duty Engines. The proposed ITR would also provide certification flexibility to significantly more-efficient 2017 through 2027 MY heavy-duty engines. In order to identify such engines, the proposed amendments add optional low-CO₂ emission standards, which reflect a 15 percent CO₂ reduction relative to a 2017 baseline diesel engine, and a greater than ten percent CO₂ reduction relative to Federal Phase 2 GHG Standards for the 2027 MY.⁶ The stringency of these proposed optional low-CO₂ standards is based upon what ARB's *Technology and Fuels Assessment*⁷ and interested manufacturers indicate can be achieved by potentially transformational, new heavy-duty engine architectures (such as a camless or opposed piston engine), which could provide significant efficiency gains but face initial OBD and other certification challenges. However, the standards are performance-based, such that any heavy-duty engine meeting the standard would qualify. The proposed ITR would provide heavy-duty engines meeting these proposed optional low-CO₂ emission standards with up to four MYs of Tier 1 certification flexibility, followed by an additional two MYs of Tier 2 flexibility, through the 2027 MY.

Truck and Bus Hybrid Conversion Systems

The proposed ITR incorporates "California Certification and Installation Procedures for Medium- and Heavy-Duty Vehicle Hybrid Conversion Systems." These proposed procedures would provide ARB certification criteria, including emission, diagnostic, warranty, reporting, and other requirements, for hybrid truck and bus conversion systems to be sold and installed on California-certified base engines or vehicles. The proposed ITR would allow a manufacturer to sell increasing California volumes of its hybrid conversion system by certifying to progressively more stringent Tier 1, Tier 2, and Tier 3/Final requirements.

For hybrid conversion systems that do not achieve at least 35 miles AER, the opportunity

5 National Renewable Energy Laboratory; *Data Collection, Testing, and Analysis of Hybrid Electric Trucks and Buses Operating in California Fleets - Final Report*; June 2015; www.nrel.gov/docs/fy15osti/62009.pdf.

6 United States Environmental Protection Agency and National Highway Traffic Safety Administration; *Greenhouse Gas Emissions and Fuel Efficiency Standards for Medium- and Heavy-Duty Engines and Vehicles – Phase 2 (Final Rule)*; August 16, 2016; <https://www3.epa.gov/otaq/climate/documents/2016-08-ghg-hd-final-rule-phase2-preamble.pdf>.

7 ARB; *Draft Technology Assessment; Engine/Powerplant and Drivetrain Optimization and Vehicle Efficiency*; June 2015; http://www.arb.ca.gov/msprog/tech/techreport/epdo_ve_tech_report.pdf.

for conversion system manufacturers to apply for less stringent Tier 1 and 2 certification requirements would sunset on January 1, 2022. For conversions that do achieve at least 35 miles AER, the opportunity for manufacturers to apply for Tiers 1 and 2 hybrid conversion system certification would sunset on January 1, 2025. A hybrid conversion system first certifying after these sunset dates would be required to meet the more stringent Tier 3/Final certification requirements.

This structure is intended to encourage early development and market launch of a diversity of hybrid conversion systems, particularly from the smaller, independent manufacturers that make up today's market, by minimizing initial engineering challenges and certification compliance costs and scaling up certification requirements as the market develops. Staff anticipates that a flourishing market for hybrid conversion systems, particularly in the medium-duty sector, could achieve near-term CO₂ reductions, and encourage larger, original vehicle manufacturers to enter the market with robust, vertically integrated hybrid trucks and buses.

OBJECTIVES AND BENEFITS OF THE PROPOSED REGULATORY ACTIONS

The proposed ITR and amendments are intended to encourage development and deployment of the next generation of truck and bus technologies that California needs to meet its air quality and climate goals. Early deployment of these technologies achieves direct emission reductions sooner than would otherwise occur, and would support development of more robust technology-advancing rulemakings. For example, early technology deployment of low-NOx engines would enable manufacturers, fleets, ARB staff, and others to assess technology feasibility, consumer acceptance, benefits, and costs, and to prepare necessary infrastructure, supply lines, and workforce training. Likewise, this proposed regulation would encourage accelerated development of robust plug-in hybrid heavy-duty vehicle technology that would support implementation of ARB's potential Advanced Clean Transit Regulation and Last Mile Delivery Regulation, if adopted. Early, accelerated technology deployment would help reduce per-unit technology cost as production volumes increase in advance of regulatory requirements. Finally, early deployment would provide an opportunity for manufacturers to anticipate and address potential technology failures before more widespread deployment could be required by regulation.

The proposed regulatory actions are also geared to support implementation of California's portfolio of funding programs for demonstrating and deploying the next generation of clean vehicles and equipment. ARB's Air Quality Improvement Program (AQIP) and Greenhouse Gas Reduction Fund (GGRF) have invested over \$200 million over the past seven years to accelerate California's transition to zero- and near-zero emission vehicles and equipment. These programs' proposed Fiscal Year 2016-17 Funding Plan, approved by the Board in June 2016, would invest an additional \$59 million to demonstrate, and \$116 million to deploy, the next generation of truck and bus technologies (contingent upon funding appropriation by the Legislature).⁸ These include incentives to demonstrate zero- and near-zero-emission heavy-duty vehicles and equipment, and to deploy hybrid, zero-emission,

⁸ ARB; Proposed Fiscal Year 2016-17 Funding Plan for Low Carbon Transportation and Fuels Investments and the Air Quality Improvement Program, Approved June 23, 2016; http://www.arb.ca.gov/msprog/aqip/fundplan/proposed_fy16-17_fundingplan_full.pdf.

and low-NOx trucks and buses. However, only two heavy-duty engines meeting optional low-NOx standards, and two hybrid heavy-duty engines (neither of which enable zero emission operation), were ARB-certified as of June 1, 2016. The regulatory actions, taken together, are intended to facilitate near-term certification of these technologies, enabling a greater diversity of promising heavy-duty engines and vehicles to be eligible for these investments and fulfilling the goal of these investment programs to foster needed technology development. The proposed regulatory actions are particularly timely given California's financial commitment to these heavy-duty vehicle demonstration and deployment projects.

ARB staff developed the proposed regulatory actions through an extensive public process. Staff made a considerable effort to inform, involve, and update the public and stakeholders on staff's progress developing the proposed regulatory actions. ARB has held three public workshops, 15 topic-specific public work group meetings, and over 50 individual stakeholder meetings to inform development of the proposed regulatory actions. The workshop and work group meeting notices were posted on the Innovative Technology Regulation webpage at <http://www.arb.ca.gov/msprog/itr/itr.htm>, and distributed to the ITR rulemaking list serve, which include over 700 subscribers as of June 1, 2016.

An Evaluation of Inconsistency or Incompatibility with Existing State Regulations (Gov. Code, § 11346.5, subd. (a)(3)(D)):

During the process of developing the proposed regulatory actions, ARB staff has conducted a search for similar regulations on this topic and has concluded that these regulations are neither inconsistent nor incompatible with existing state regulations.

DISCLOSURE REGARDING THE PROPOSED REGULATION AND AMENDMENTS

Fiscal Impact/Local Mandate Determination Regarding the Proposed Actions (Gov. Code, § 11346.5, subds. (a)(5)&(6)):

The proposed ITR is anticipated to require hiring two additional engineering staff persons by ARB, at a total cost of \$290,000, beginning in the 2017-2018 fiscal year and thereafter. These additional personnel would be responsible for helping review technical documents, and to test, and determine OBD and overall engine or vehicle certification compliance on increasingly more complex and diverse medium-duty, heavy-duty, and hybrid vehicles. Further detail is provided in the Economic and Fiscal Impacts Statement (Form 399) prepared for these proposed regulatory actions.

Under Government Code sections 11346.6, subdivision (a)(5) and 11346.5, subdivision (a)(6), the Executive Officer has determined that the proposed regulatory actions would not impose other costs on, nor create savings for, federal, state, or local agencies. In addition, the proposed regulatory actions are unlikely to create any cost or savings in federal funding to the State.

Cost or Savings to State Agencies

The Executive Officer has made the determination that the proposed regulatory actions would not provide a cost or savings to state or local agencies other than the additional ARB staffing costs described above.

Local Mandate

The Executive Officer has made the determination that the proposed regulatory actions do not impose a mandate upon local agencies.

Costs to any Local Agency or School District Requiring Reimbursement under Section 17500 et seq.:

The Executive Officer has made the determination that the proposed regulatory actions would not impose any costs to any local agency or school district requiring reimbursement.

Other Non-Discretionary Costs or Savings to Local Agencies

The Executive Officer has made the determination that the proposed regulatory actions would not impose other non-discretionary costs or savings to local agencies.

Costs or Savings in Federal Funding to the State

The Executive Officer has made the determination that the proposed regulatory actions would not result in a significant cost or savings in federal funding to the state.

Housing Costs

The Executive Officer has made the determination that the proposed regulatory actions would not have an effect on housing costs.

Significant Statewide Adverse Economic Impact Directly Affecting Business, Including Ability to Compete (Gov. Code §§ 11346.3, subd. (a), 11346.5, subds. (a)(7)&(8)):

The Executive Officer has made the determination that the proposed regulatory actions would not have a significant statewide adverse economic impact directly affecting businesses, including the ability of California businesses to compete with businesses in other states, or on representative private persons.

Cost Impacts on Representative Private Persons or Businesses (Gov. Code, § 11346.5, subd. (a)(9)):

In developing this regulatory proposal, ARB staff evaluated the potential economic impacts on representative private persons or businesses. ARB is not aware of any cost impacts that a representative private person or business would necessarily incur in reasonable compliance with the proposed regulatory actions.

Results of the Economic Impact Analysis (Gov. Code, § 11346.5 subd. (a)(10))

Staff anticipates there are between 25 and 50 businesses that could be directly affected by the proposed regulatory actions. These include new heavy-duty engine, vehicle, and hybrid driveline manufacturers, and manufacturers and installers of aftermarket hybrid conversion systems. The thousands of truck and bus fleets in California, particularly larger fleets that are most likely to be early adopters of zero- and near-zero-emission truck and bus technologies, would also be indirectly affected by the proposed regulatory actions. These proposed regulatory actions are not expected to eliminate any businesses in California. One hybrid heavy-duty vehicle manufacturer and two hybrid truck conversion system manufacturers have facilities in California at this time.

These proposed regulatory actions are not expected to eliminate any jobs in the state of

California, since the proposed ITR is anticipated to provide certification compliance cost savings for participating manufacturers. Should the proposed ITR increase the number of manufacturers able to certify their systems in California, staff anticipates the proposed regulatory actions could potentially lead to some minor level of job and business creation for hybrid conversion system manufacturers and installers as the market expands. The proposed regulatory actions are not anticipated to have any impacts on worker safety.

Depending upon the level of manufacturer participation, the proposed regulatory actions could provide a modest reduction in NO_x and CO₂ emissions, resulting in a modest benefit to the health and welfare of California residents, and to the state's environment.

Effect on Jobs/Businesses

The Executive Officer has determined that the proposed regulatory actions could potentially lead to some level of business expansion within California as the market for eligible truck and bus technologies expands. However, it is not anticipated that any new businesses would be created or eliminated within California as a result of the proposed regulatory actions. If the proposed regulatory actions result in the expansion of California businesses, there may be a small number of new jobs created within California. It is not anticipated that the proposed regulation will result in the elimination of any jobs in California or nationally. A detailed assessment of the economic impacts of the proposed regulatory actions can be found in the Economic Impact Analysis in the Initial Statement of Reasons (ISOR).

Benefits of the Proposed Regulation

The objective of the proposed regulation is to encourage accelerated development and deployment of innovative truck and bus technologies by providing manufacturers of these technologies targeted, short-term certification flexibility. The proposed regulatory actions are one of a suite of strategies ARB is pursuing to transition to a zero- and near-zero-emission transportation system, as needed to meet the State's air quality and climate goals.

Effect on Small Business (Cal. Code Regs., tit. 1, § 4, subds. (a)&(b)):

The Executive Officer has also determined under California Code of Regulations, title 1, section 4, that the proposed regulatory actions would potentially affect small businesses. The proposed regulatory actions are anticipated to provide a potential net economic benefit to participating innovative technology manufacturers, including small businesses. While few manufacturers have existing, certified innovative technologies that could potentially be eligible for this proposed regulation's certification flexibility, staff anticipates that these numbers could increase as the technologies mature. In general, existing heavy-duty low-NO_x, low-CO₂, and hybrid new engines tend to be manufactured and certified by larger, multi-national engine manufacturers. The certification flexibility provided by the proposed ITR (including the proposed amendments) for newly manufactured engines will likely therefore primarily benefit larger businesses.

Hybrid conversion system manufacturers, on the other hand, which tend to be small businesses. These manufacturers typically purchase a truck or bus chassis from large original vehicle manufacturers for retrofit with their hybrid conversion systems. Staff anticipates that hybrid conversion systems will continue to be manufactured almost exclusively by small businesses for the foreseeable future. Should these procedures increase the number of manufacturers able to certify their systems in California, as

intended, staff anticipates the proposed regulatory actions, particularly the proposed ITR, could lead to some minor level of business creation or expansion, including small business creation and expansion.

ALTERNATIVES STATEMENTS (Gov. Code, § 11346.5, subs. (a)(13)):

Before taking final action on the proposed regulatory actions, the Board must determine that no reasonable alternative considered by the Board, or that has otherwise been identified and brought to the Board's attention, would be more effective at carrying out the purpose for which the actions are proposed, would be as effective and less burdensome to affected private persons than the proposed actions, or would be more cost-effective to affected private persons and equally effective in implementing the statutory policy or other provisions of law.

BUSINESS REPORTS

The Executive Officer has found that the requirements of the proposed regulatory actions, which apply to businesses, are necessary for the health, safety, and welfare of the people of California.

ENVIRONMENTAL ANALYSIS

ARB, as the lead agency for the proposed regulatory actions, has prepared an environmental analysis (EA) under its certified regulatory program (California Code of Regulations, title 17, sections 60000 through 60008) to comply with the requirements of the California Environmental Quality Act (CEQA; Public Resources Code section 21080.5). The EA determined that the proposed regulatory actions would not result in any significant adverse impacts on the environment. The basis for reaching this conclusion is provided in Chapter IV of the ISOR. Written comments on the EA will be accepted during a 45-day public review period starting on **September 2, 2016** and ending at **5pm on October 17, 2016**.

AVAILABILITY OF DOCUMENTS AND AGENCY CONTACT PERSONS

ARB staff has prepared an ISOR for the proposed regulatory actions, which includes a summary of the economic and environmental impacts of the proposals. The report is entitled: Proposed Certification and Aftermarket Part Approval Flexibility for Innovative Medium- and Heavy-Duty Engine and Vehicle Technologies Regulation (Innovative Technology Regulation).

Copies of the ISOR and the full text of the proposed regulatory language, with the amendments in underline and strikeout format to allow for comparison with the existing regulations, may be accessed on ARB's website, listed below, or may be obtained from the Public Information Office, Air Resources Board, 1001 I Street, Visitors and Environmental Services Center, First Floor, Sacramento, California, 95814, (916) 322-2990, as of August 30, 2016.

Inquiries concerning the substance of the proposed regulatory actions may be directed to the agency representative: Joe Calavita, Staff Air Pollution Specialist, Off-Road Implementation Section, at (916) 445-4586, or (designated back-up contact) Mr. David Chen, Manager, Advanced Emission Control Strategies Section, at (626) 350-6579.

Further, the agency representative to whom non-substantive inquiries concerning the proposed administrative actions may be directed is Nicole Hutchinson, Regulations Coordinator, (916) 322-6533. The Board staff has compiled a record for this rulemaking, which includes all the information upon which the proposals are based. This material is available for inspection upon request to the contact persons.

HEARING PROCEDURES

The public hearing will be conducted in accordance with the California Administrative Procedure Act, Government Code, title 2, division 3, part 1, chapter 3.5 (commencing with section 11340).

Following the public hearing, the Board may adopt the regulatory language as originally proposed, or with non-substantial or grammatical modifications. The Board may also adopt the proposed regulatory language with other modifications, if the text, as modified, is sufficiently related to the originally proposed text, such that the public was adequately placed on notice and such that the regulatory language, as modified, could result from the proposed regulatory actions; in such event, the full regulatory text, with the modifications clearly indicated, will be made available to the public, for written comment, at least 15-days before it is adopted.

The public may request a copy of the modified regulatory text, if applicable, from ARB's Public Information Office, Air Resources Board, 1001 I Street, Visitors and Environmental Services Center, First Floor, Sacramento, California, 95814, (916) 322-2990.

FINAL STATEMENT OF REASONS AVAILABILITY

Upon its completion, the Final Statement of Reasons (FSOR) will be available, and copies may be requested from, the agency contact persons in this notice, or it may be accessed on ARB's website, listed below.

INTERNET ACCESS

This notice, the ISOR, and all subsequent regulatory documents, including the FSOR, when completed, are available on ARB's website for this rulemaking at <http://www.arb.ca.gov/regact/2016/itr2016/itr2016.htm>.

SPECIAL ACCOMMODATION REQUEST

Consistent with California Government Code section 7296.2, special accommodation or language needs may be provided for any of the following:

- An interpreter to be available at the meeting;
- Documents made available in an alternate format or another language;
- A disability-related reasonable accommodation.

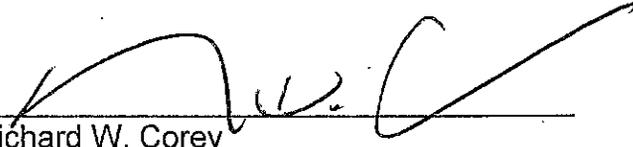
To request these special accommodations or language needs, please contact the Clerk of the Board at (916) 322-5594 or by facsimile at (916) 322-3928 as soon as possible, but no later than 10 business days before the scheduled Board meeting. TTY/TDD/Speech to Speech users may dial 711 for the California Relay Service.

Consecuente con la sección 7296.2 del Código de Gobierno de California, una acomodación especial o necesidades lingüísticas pueden ser suministradas para cualquiera de los siguientes:

- Un intérprete que esté disponible en la audiencia;
- Documentos disponibles en un formato alterno u otro idioma;
- Una acomodación razonable relacionados con una incapacidad.

Para solicitar estas comodidades especiales o necesidades de otro idioma, por favor llame a la oficina del Consejo al (916) 322-5594 o envíe un fax a (916) 322-3928 lo más pronto posible, pero no menos de 10 días de trabajo antes del día programado para la audiencia del Consejo. TTY/TDD/Personas que necesiten este servicio pueden marcar el 711 para el Servicio de Retransmisión de Mensajes de California.

CALIFORNIA AIR RESOURCES BOARD



Richard W. Corey
Executive Officer

Date: August 16, 2016

The energy challenge facing California is real. Every Californian needs to take immediate action to reduce energy consumption. For a list of simple ways you can reduce demand and cut your energy costs, see our website at www.arb.ca.gov.